

Application Number 09/730,246
Responsive to Office Action mailed May 20, 2004

REMARKS

This amendment is responsive to the Office Action dated May 20, 2004. Applicant has amended claims 36, 45, 50, and 54, and added new claim 56. Claims 36-56 are now pending.

Claims 36-42 and 45-47 stand rejected under 35 U.S.C. 102(b) as being anticipated by Sugimoto (JP 01-023440). Claims 36-42 and 45-49 also stand rejected under 35 U.S.C. 103(a) as being unpatentable over Sugimoto (JP 01-023440) in view of Kashiwagi et al. (EP 0418897) and Folger et al. (US 3,565,978).

Claims 36-49 also stand rejected under 35 U.S.C. 103(a) as being unpatentable over Sugimoto (JP 01-023440) in view of Kashiwagi et al. (EP 0418897) and Folger et al. (US3,565,978) combined with Daecher et al. (US 6,183,829).

Claims 36-55 also stand rejected under 35 U.S.C. 103(a) as being unpatentable over Sugimoto (JP 01-023440) in view of Kashiwagi et al. (EP 0418897), Folger et al. (US3,565,978), Daecher et al. (US 6,183,829) and Horie et al. (US 5,581,539).

As a preliminary matter, Applicant respectfully notes that the Examiner's claim rejections under section 103(a) are inconsistent with the Examiner's rejections under 35 U.S.C. 102(b). In particular, the rejections of claims under 35 U.S.C. 102(b) as being anticipated by Sugimoto imply that Sugimoto teaches all elements of these claims, whereas the current rejections of some of the same claims under section 103(a) as being obvious over Sugimoto in view of the other references imply that Sugimoto fails to teach one or more elements of these claims. This issue, however, should be moot in view of the claim amendment and following remarks.

Applicant respectfully traverses the rejections under sections 102 and 103. In particular, for the record, Applicant respectfully traverses the current rejections based on various arguments already presented in previous responses to Office Actions. Applicant incorporates the previous arguments herein, but for reasons of brevity, does not again repeat the arguments already presented. Applicant does not acquiesce to any of the current rejections or the Examiner's characterizations of the prior art.

In the interest of expediting the prosecution of this application toward issuance, Applicant has amended the current claims in order to address various concerns that the Examiner identified during an Examiner's interview of August 3, 2004. An Interview Summary is being filed concurrently with this Amendment. The amendments are discussed in greater detail below.

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Applicant respectfully requests the Examiner's reconsideration of the claims and allowance of the application in view of the current amendments and the following remarks.

Specifically, Applicant has made two clarifications to the pending independent claims in order to address various concerns that the Examiner identified during the Examiner's interview of August 3, 2004. The claim amendments ensure that the pending claims clearly distinguish over Sugimoto and the other applied references.

First, Applicant has amended the independent claims to clarify that the method includes focusing light from a laser in a mastering system to form a focused laser spot on a photosensitive master. The focused laser spot defines a laser spot size. The pending claims also require laser etching the photosensitive master to form a master pattern that is inverse of a desired replica pattern, the desired replica pattern defining a track pitch less than 2 multiplied by the laser spot size associated with the laser used to perform the laser etching.

Applicant believes that this amendment more clearly distinguishes Applicant's claims from Sugimoto, which is cited as the primary reference in all pending rejections. In contrast to Applicant's claims, Sugimoto teaches a process that purposely uses non-focused light. For example, Sugimoto specifically states in the constitution portion of the Abstract that:

The process is changed from a conventional process, the numerical aperture of an objective lens 3 is decreased to increase the exposure power. **The objecting lens 3 is offset and not focused to the resist 2 but placed out of focus...** (emphasis added).

Moreover, in the latest Office Action, the Examiner specifically noted that "the arguments of the Applicant fail to account for the use of defocusing of the laser beam in the reference." Page 3 of Office Action. As Applicant's claims now specifically preclude the use of a defocused laser beam, Applicant respectfully submits that the claims clearly distinguish Sugimoto.

In a number of places, Applicant's specification provides adequate support for the amendment to the claims that recites "focusing light from a laser in a mastering system to a focused laser spot on a photosensitive master." As one example, Applicant points the Examiner to page 14, lines 4-6, of Applicant's specification.

The second clarification that Applicant has made to all pending claims limits the track pitch that is defined by the method. In particular, all pending claims now require that the track pitch is less than or equal to approximately 700 nanometers. Applicant also believes that this track pitch limitation further distinguishes Applicant's claimed invention from Sugimoto and the

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other applied references. The amendment should also address concerns that the Examiner identified in the Examiner's interview of August 3, 2004, relating to large dimensions and duty cycles less than 0.5. These concerns of the Examiner are also mentioned on page 4 of the Office Action.

The amendment to the independent claims to recite that the track pitch is less than or equal to approximately 700 nanometers can be easily derived from Applicant's specification as follows. Applicant's specification (and various claims) recite the calculation of spot size as being $SS = 0.57 \lambda / NA$ (full width at half maximum intensity (FWHM)). By plugging in the largest value for λ ($\lambda = 460$) and smallest value for NA ($NA = .75$) from page 1 of Applicant's specification, a spot size of 349.6 nanometers is derived. As Applicant's claims recite a track pitch less than 2 times the spot size, the track pitch would be less than $(2) * (349.6)$, i.e., less than approximately 700 nanometers.

New claim 56 is dependent on claim 54 and further recites that the photosensitive material comprises a positive photoresist material and wherein exposing the photosensitive material to developer solution comprises developing the positive photoresist material.

Applicant respectfully submits that all claims in this application are now clearly in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 09-0069. The Examiner is invited to telephone the below-signed attorney to discuss this application. The Examiner is also invited to telephone Applicant's representative Kelly Patrick Fitzgerald at 651-735-1100, ext. 13, if the Examiner believes that further discussions would be useful in securing allowance of this application.

Date:

8/16/04

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